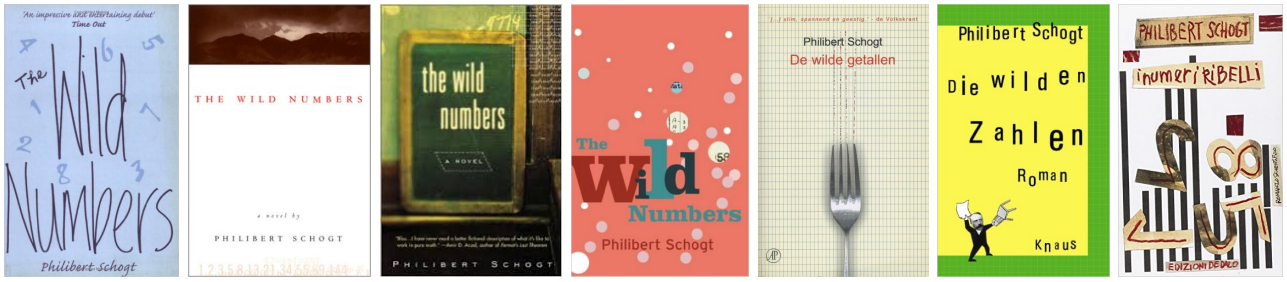
The Wild Numbers / **De wilde getallen** *Philibert Schogt* Phoenix / De Arbeiderspers, 2000 / 1998, ISBN 978-1568581668 / 978-9029537315 (pbk), 160 pp.



Philibert Schogt

Isaac Swift, the main character of this novel, is a mediocre mathematician of 35 working at an American university. Since he was a kid he was obsessed by numbers and pure mathematics. He has an ex-wife who could not stand his excitement for mathematics and he is terrorized by a nutty older student Vale who is attending his class. At some point Vale gives him a manuscript that Swift puts aside without reading but it triggers him to look at an old problem again. It was formulated in 1823 by Anatole Millechamps de Beauregard who challenged his friends to solve a puzzle within a week. Unfortunately, he was murdered, the solution was unknown, and it became an open problem in number theory. Mathematicians tried hard to prove that there are infinitely many different wild numbers where the wild number w_n is defined as follows. Start with n, apply a number of operations resulting in a sequence of rationals numbers. If the sequence eventually ends up to be integer again, then this is w_n. If the sequence does not end, $w_n = 0$.

Swift starts working like crazy on the problem, balancing between despair and obstinacy. Then with a flash of insight he believes he has cracked the problem. All the disregard he got from his colleagues will be over and he will gain all the praise and glory he deserves. A colleague in his department, Dimitri Arkanov, had revived the problem earlier in the 1960s by linking the wild numbers to prime numbers. Together they go through the proof and find it to be correct. Swift prepares a paper that is mailed to the prestigious journal *Number*. Vale happens to spot the manuscript and accuses Swift of plagiarism. He attacks and injures Swift. When other colleagues, after the fight between Vale and Swift, also have a look at the manuscript, it turns out to have a flaw at the very beginning, resulting in a non-proof because it is implicitly assuming from the start what has to be proved. Swift's life pulls back to resignation.

What is good about the novel is that Schogt who studied philosophy with mathematics on the side seems to have understood how mathematics can be addictive and that the switch between despair and euphoria is almost instantly after a moment of insight when all the pieces of the puzzle fit together. Swift, the mathematician, is also sketched as a 'normal' person, not the stereotype of the autistic alien.

Of course the wild number problem is fictitious but it reminds one of the $3n + 1$ problem also known as the Collatz conjecture, and several other names too. It is another sequence problem. Take any natural number. If it is even, divide by 2 and if it is odd multiply by 3 and add 1. The conjecture is that the sequence will always arrive at 1. It has been investigated by many, but there still is no proof. Paul Erdős said that "Mathematics is not ready for such problems" and offered 500 USD for its solution.

For several years, Schogt's manuscript was not accepted for publication. It was only after Andrew Wiles published his proof of Fermat's last theorem in 1995 that mathematics became sexy again and *De wilde getallen* was finally published in 1998, an English version came out in 2000, and later appeared German and Italian translations. In fact the first idea of Schogt was to let Swift solve Fermat's problem, but fortunately his friend talked him out of that because 'the mathematics there are so involved that it would be most unrealistic that a mediocre mathematician would solve the problem'.

Although the wild number sequence makes no sense, it nevertheless got a mention in the *Online Encyclopedia of Integer Sequences*[1] founded by N.J. Sloane. This may be partially because some mathematicians got interested and formulated specific transformations to generate sequences of pseudo wild numbers which can also be found in the OEIS. These do generate genuine number theoretic problems.

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[1] entry A058883 at `http://oeis.org/`